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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Mark Kintis

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EXAMINER

EJAZ, NAHEED

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/941,371	KINTIS, MARK	
	Examiner	Art Unit	
	NAHEED EJAZ	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 12-15 and 28-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 12-15 & 28-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-6, 12-15 & 28-32 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claim 1 is objected to because of the following informalities: replace "input" (line 6) by ---output---. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. As per claim 1, the limitations "inverse phase modulator electrically coupled to the other of said third and fourth input ports" (lines 12-13). It is not clear which ports are

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"the other" (line 13) and how inverse phase modulator is coupled to these ports. Is the modulator coupled to the both ports or one port?

6. Claims 2-6 & 12-15 are also rejected under 35 U.S.C 112, second paragraph, since they are based upon rejected claim 1.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thorson (6,101,225) in view of Horiguchi et al. (6,133,791) (hereinafter, Horiguchi) and further in view of Stover (3,755,741).

9. As per claim 28, Thorson teaches, 'providing a two stage mixer including first and second mixer (figure 2, elements 120 & 122, col.5, lines 32-34) each having a local oscillator port, an input port for receiving first and second local oscillator signals' (figure 2, elements 120, 122 & 126), phase modulating the local oscillator signal (figure 2, elements 113, 126 & 242), inverse phase modulating the local oscillator signal (figure 2, elements 111, 124, 126 & 240, col.5, lines 32-44).

Thorson does not teach modulating according to a pseudorandom code.

Horiguchi teaches a pseudorandom code generator (figure 14, element 51) controlling phase modulators (figure 14, element 47) that output a mixer. It would have been obvious to one of ordinary skill in the art, at the time invention was made, to use PN code controller of Horiguchi into Thorson's mixing device in order to synchronize modulators which is well known in the art.

Thorson and Horiguchi do not teach same pseudorandom code for modulation.

Stover teaches pseudorandom code and its inverse (same code) for the modulation (col.4, lines 49-55) which would read on claim limitations. Therefore, It would have been obvious to one of ordinary skill in the art, at the time invention was made, to replace Horiguchi pseudorandom code generator 51 (figure 14) by pseudo random code and its inverse code of Stover in order to eliminate the possibility of unnecessary correlation between received signal modulation components (col.4, lines 52-55) and thus enhance the system performance of Horiguchi and Thorson.

10. Claims 29, 30 & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorson (6,101,225) in views of Horiguchi et al. (6,133,791) and Stover (3,755,741), as applied to claim 28 above, and further in view of Underbrink et al (6,754,287) (hereinafter, Underbrink).

11. As per claim 29, Thorson, Horiguchi and Stover teaches all the limitations in the previous claim on which claim 29 depends but fail to disclose BPSK modulation technique for modulator and inverse modulator. However, BPSK is a common type of technique used in phase modulation. In digital modulation technique Underbrink discloses the use of BPSK modulation as a type of PSK modulation in which two carrier

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phase are used (col.7, lines 45-63). BPSK is commonly used because of its simplicity and high tolerance to noise. It would have been obvious to one of ordinary skill in the art, at the time invention was made, to use BPSK modulation and inverse modulation for a phase modulation and inverse modulation of Thorson, Horiguchi and Stover.

12. As per claim 30, Thorson, Horiguchi and Stover teaches all the limitations in the previous claim on which claim 30 depends but fail to disclose QPSK modulator. A QPSK modulator is a common type of PSK modulator. In digital modulation technique Underbrink discloses the use of QPSK modulation as a type of PSK modulation in which four carrier phase are used (col.7, lines 65-68).

13. As per claim 32, Thorson, Horiguchi and Stover teaches all the limitations in the previous claim on which claim 30 depends but fail to disclose an M-ary modulator and inverse M-ary modulator. In digital modulation technique Underbrink disclose the use of M-ary, or MPSK modulation as a type of PSK modulation in which multiple carrier phase are used (col.8, lines 1-4). M-ary, or multiple phase modulation, is advantageous because it produces improve error performance. It would have been obvious, to one of ordinary skill in the art to use M-ary modulator and inverse M-ary modulator for a phase modulator and inverse phase modulator at the time of invention.

14. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thorson (6,101,225) in views of Horiguchi et al. (6,133,791) and Stover (3,755,741), as applied to claim 28 above, and further in view of Scott (5,784,403).

15. As per claim 31, Thorson, Horiguchi and Stover teaches all the limitations in the previous claim on which claim 30 depends but fail to disclose GMSK modulator and

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inverse modulator. However, in his modulation device, Scott teaches a phase modulator with an alternate embodiment that includes the use of GMSK modulation instead of PSK modulation (col.18, line 60). Because GMSK is a type of phase modulation and has the benefit of reducing the bandwidth required to modulate signals it would be obvious to one skilled in the art to use the GMSK modulator and inverse modulator in Thorson's apparatus at the time of invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAHEED EJAZ whose telephone number is (571)272-5947. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Naheed Ejaz
Examiner
Art Unit 2611

3/13/2008

N.E.

/Chieh M. Fan/

Supervisory Patent Examiner, Art Unit 2611